

REMARKS

The amendment of claim 20 is to correct a format error in claim 20 and is not made in response to the Examiners rejection of claim 20.

The Examiner rejected claims 11-13, 16 and 18-19 under 35 U.S.C. §102(e) as being unpatentable over Heo et al. (US Pat. 6,756,654).

The Examiner rejected claims 14, 15, 17 and 20 under 35 U.S.C. 103 as being unpatentable over Heo et al. in view of Kuroi et al. (US Pat. 5,889,335)..

Applicants respectfully traverse the §102(e) and §103 rejections with the following arguments.

35 USC § 102 Rejections

The Examiner rejected claim 11 under 35 U.S.C §102(e) stating “Heo in figs. 4, 5 and 8 disclose a method of fabricating a filled trench structure, comprising: (a) forming a planarization stop layer 120 on a top surface of a substrate 100; (b) forming a first set of trenches in a first region 1 of planarization. stop layer and substrate and forming a second set of trenches in a second region 2 of planarization stop layer and substrate, trenches in first set of trenches having a higher aspect ratio than trenches in second region (col. 8, lines 35-38); (c) depositing a fill material 170 in first and second set of trenches and on a top surface of planarization stop layer, fill material completely filling trenches (col. 7, lines 1-24); (d) removing an upper portion of said fill material; and (e) removing, using a planarization process, all fill material from top surface of planarization stop layer, a top surface of fill material in first and second sets of trenches co-planer with top surface of planarization stop layer (col. 7, lines 24-35 and fig. 8).”

Applicants contend that claim 11, as amended, is not anticipated by Heo et al. because Heo et al. does not teach each and every feature of claim 11. For example Heo et al. does not teach “after step (c), removing, using a wet etching, a dry etching, a reactive ion etching or a plasma etching process, an uppermost layer of said fill material from over said first and second sets of trenches and said top surface of said planarization stop layer, a thinned layer of said fill material remaining over said first and second sets of trenches and on said top surface of said planarization stop layer, said fill material still completely filling said first and second sets of trenches.

Applicants respectfully point out that Applicants step (d) is never performed by Heo et al. Further Applicants steps (c), (d) and (e) are performed on the same layer of fill material while Heo et al. uses two different layers of fill material. Heo et al. in FIG. 5, fills trenches 131 and

132 with a first fill material 160 which does not completely fill trench 132 and which in FIG. 8, is removed from trench 132 and partly removed from trenches 131. Then a second fill material 170 is used to completely fill trenches 131 and 132 and the second fill material 170 is planarized.

More specifically:

(1) In Heo et al. first fill material 160 never “(c) ...completely fills said first and second sets of trenches” as Applicants claim 11 requires.

(2) In Heo et al. when first fill material 160 is etched (Heo et al. FIGs, 6A, 6B and 7A, the fill material 160 is not “(d)...still completely filling said first and second sets of trenches” as Applicants claim 11 requires.

(3) In Hero et al., a top surface of first fill material is 160 is not “(e)...co-planer with said top surface of said planarization stop layer” as Applicants claim 11 requires.

(4) In Hero et al., Applicants step (d) is never performed on second fill material 170, only Applicants steps (c) and (e) are performed on second fill material 170.

Based on the preceding arguments, Applicants respectfully maintain that claim 11 is not unpatentable over Heo et al. and is in condition for allowance. Since claims 12-21 depend from claim 11, Applicants respectfully maintain that claims 12-21 are likewise in condition for allowance.

35 USC § 103 Rejections

As to claims 14, 15, 17 and 20 Applicants have argued *supra* in response to the Examiners § 102(e) rejection of claim 11 that claim 11 is allowable, since claims 14, 15, 17 and 20 depends from claim 11, Applicants respectfully maintain that claims 14, 15, 17 and 20 are not unpatentable over Heo et al in view of Kuuroi et al. and are in condition for allowance.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact the Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0458.

Respectfully submitted,
FOR: Economikos et al.

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BY:
Jack P. Friedman
Jack P. Friedman
Reg. No. 44,688
FOR:
Anthony M. Palagonia
Registration No.: 41,237

Schmeiser, Olsen & Watts
22 Century Hill Drive, Suite 302
Latham, New York 12110
(518) 220-1850
(518) 220-1857 Facsimile
Agent Direct Dial Number: (802)-899-5460